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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHEVALIER, ALICIA ANN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 12/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,254

Applicant(s)

OZIN ET AL.

Examiner

Alicia Chevalier

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 87-100 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 87-94, 96, 97, 99 and 100 is/are rejected.
- 7) ☒ Claim(s) 95 and 98 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I, claims 1-16 and 87-100 in Paper No. 7, filed September 9, 2003 is acknowledged.

Specification

2. The use of the trademark LINCOLN LOG® has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 99 and 100 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 99 and 100 contain the trademark/trade name LINCOLN LOG®. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second

Art Unit: 1772

paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe a lattice structure and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-14 and 87-90 are rejected under 35 U.S.C. 102(e) as being anticipated by Patel et al. (U.S. Patent No. 6,436,187 B1).

Regarding claims 1, Patel discloses a composite material comprising a substrate and a well ordered colloidal crystal self-assembled on the substrate, the well ordered colloidal crystal defining a pre-selected pattern and including colloidal particles of selected shape and size (*col. 3, lines 9-36 and figure 2*).

Art Unit: 1772

Regarding claim 2, Patel discloses that the substrate includes indentations, wherein the colloidal crystal is formed by self-assembly in the indentations (*col. 3, lines 9-36 and figure 2*), the indentations are expected to have a pre-elected size and shape and the colloidal crystal is expected to form a pre-selected pattern.

Regarding claim 3, Patel discloses that the substrate is a silicon wafer (*see example 1, col. 7, line 8*), which is a semiconductor.

Regarding claim 4, Patel discloses that the colloidal particles are spherical colloidal particles having a diameter of about 0.2-40 microns (*col. 5, lines 6-10*).

Regarding claim 5, Patel discloses that the spherical colloidal particles are silicon dioxide, which is silica (*col. 6, lines 37-42*).

Regarding claim 6, Patel discloses the particles are consolidated by chemical vapor deposition (*col. 2, line 5*).

Regarding claim 7, Patel discloses that the consolidated colloidal crystal is infiltrated with a material having a high refractive index (*col. 1, line 54 through col. 2, line 6*).

Regarding claim 8, Patel discloses the ordered colloidal suspensions of relative low refractive index particles such as silica or polystyrene, referred to as colloidal crystals, are used as infiltration of high refractive index materials in a desired structure, and the particles are then etched away or burned out to provide the voids (*col. 1, line 54-63*), which is deemed to be the same as Applicant's limitation "the colloidal particles are removed producing an inverted infiltrated colloidal crystal embedded on the substrate."

Regarding claims 9 and 10, Patel discloses the colloidal crystal is a photonic crystal characterized by a photonic bandgap (*col. 1, lines 7-16 and col. 4, lines 6-27*).

Regarding claims 11-14, Patel discloses that the composite further includes a means for coupling light, i.e. directing light, into and out of said colloidal crystal such as waveguides (*col. 6, line 55-67*).

Regarding claims 87-90, the method of forming the product is not germane to the issue of patentability of the product itself. Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production.

Regarding claims 87-90, Patel discloses a substrate having a surface with surface relief pattern and colloidal particles on the substrate in the relief pattern (*col. 3, lines 9-36 and figure 2*), the surface relief pattern is expected to have been selected and the colloidal particles are expected to have selected shape and size.

7. Claims 1-6 and 87-90 are rejected under 35 U.S.C. 102(b) as being anticipated by Gates et al. ("Self-Assembly of Meso and Nanoparticle ...", Materials Research Society Symposium Procedures, April 5, 1999).

Regarding claims 1 and 3, Gates discloses a glass substrate and a well ordered colloidal crystal self-assembled on the substrate, the well ordered colloidal crystal defining a pre-selected pattern and including colloidal particles of selected shape and size (*page 149 line 21 through page 150, line 16*).

Regarding claim 2, Gates discloses that the substrate includes channels of pre-selected size and shape, wherein the colloidal crystal is formed by self-assembly in the channel to form a pre-selected pattern (*page 150, lines 1-16*).

Regarding claim 4, Gates discloses that the colloidal particles are spherical colloidal particles having a diameter of about 100 nm (*page 151, line 26*), which is 0.1 microns.

Regarding claim 5, Gates discloses that the spherical colloidal particles are silicon dioxide (silica) (*page 149, line 12*).

Regarding claim 6, Gates discloses the particles are consolidated by thermal sintering (*page 151, lines 33-36*).

Regarding claims 87-90, the method of forming the product is not germane to the issue of patentability of the product itself. Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production.

Regarding claims 87-90, Gates discloses a substrate having a surface with surface relief pattern and colloidal particles on the substrate in the relief pattern (*page 149 line 21 through page 150, line 16*), the surface relief pattern is expected to have been selected and the colloidal particles are expected to have selected shape and size.

8. Claims 1-4, 15, 16 and 87-90 are rejected under 35 U.S.C. 102(b) as being anticipated by Clark et al. (U.S. Patent No. 4,728,591).

Regarding claims 1, Clark discloses a composite material comprising a substrate and a well ordered colloidal crystal self-assembled on the substrate (*col. 2, lines 25-31 and col. 5, lines 33-54*), the well ordered colloidal crystal would be expected to define a pre-selected pattern and include colloidal particles of selected shape and size.

Regarding claim 2, Clark discloses that the substrate includes indentations, wherein the colloidal crystal is formed by self-assembly in the indentations (*col. 2, lines 25-31; col. 5, lines 33-54 and figure 3*) the colloidal crystal would be expected to be of pre-selected size and shape and the indentations are expected to form a pre-selected pattern.

Art Unit: 1772

Regarding claim 3, Clark discloses that the substrate is an insulator (*col. 3, lines 60-68*).

Regarding claim 4, Clark discloses that the colloidal particles are spherical colloidal particles having a diameter of about 0.005-1 micron (*col. 5, lines 33-54*).

En Regarding claim 15, ^{Clark}~~Patel~~ discloses that the composite material includes a layer of material formed on top of the colloidal crystal and the surface (*figures 6B and 6E*).

Regarding claim 16, Clark discloses the material is made of the substrate material so that the colloidal crystal is embedded in said substrate (*col. 9, line 67 bridging col. 10, line 13*).

Regarding claims 87-90, the method of forming the product is not germane to the issue of patentability of the product itself. Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production.

Regarding claims 87-90, Clark discloses a substrate having a surface with a surface relief pattern and colloidal particles on the substrate in the relief pattern (*col. 5, lines 33-54*), surface relief pattern is expected to be a selected pattern and the particles are expected to be of selected shape and size.

9. Claims 91-94 are rejected under 35 U.S.C. 102(b) as being anticipated by Asher et al. (U.S. Patent No. 6,014,246).

Regarding claims 91-94, the method of forming the product is not germane to the issue of patentability of the product itself. Furthermore, the determination of patentability for a product-by-process claim is based on the product itself and not on the method of production.

Regarding claim 91, Asher discloses a product comprised of a film of colloidal particles (*col. 9, line 22*) on a planar surface of a substrate with colloidal particles of a shape (*col. 9, lines 9-11*) and having a mean diameter of about 600 nm (*col. 5, line 47*).

Art Unit: 1772

Regarding claim 92, Asher discloses a substrate with a substantially planar top surface and layer on top of the substrate containing first and second colloidal particles of selected shape and size and infiltrating a polymer into void spaces between the colloidal particles (*col. 9, lines 1-62 and col. 5, lines 41-56*).

Regarding claim 93, Asher discloses that the first colloidal particles are spherical colloidal particles having a first mean diameter, and wherein said second colloidal particles are spherical colloidal particles having a second mean diameter wherein said first diameter is smaller than said first diameter (*col. 9, lines 47-62*).

Regarding claim 94, Asher discloses that the product is characterized by a reflectance spectrum comprised of a first reflectance peak having a wavelength position and bandwidth determined by the diameter of said first spherical particles and a second reflectance peak having a wavelength position and bandwidth determined by the diameter of said second spherical particles (*col. 9, lines 47-62*).

10. Claims 96 and 97 are rejected under 35 U.S.C. 102(e) as being anticipated by Maenosono et al. (U.S. Patent No. 6,337,117).

Regarding Applicant's claim 96, Maenosono discloses an optical device comprising a substrate and a first array of first nanoparticles in a binder of a first red size arrayed in elongate patterned strips (*col. 14, lines 8-18*) across a top surface of the substrate, and a second array of second nanoparticles of a second green size arrayed in elongate, parallel and spaced strips across a top surface of the substrate with each strip of said second array being between two adjacent strips of the first array, and wherein said first size is different from the second size (*col. 13, line*

Art Unit: 1772

66 bridging col. 14, line 30 and figure 4c). Note colloidal particles are particles in a suspension and have a size of 1 to 1000nm.

Maenosono's nanoparticles, nanometer sized particles, in a binder are deemed to meet the limitation "colloidal particles."

Regarding Applicant's claim 97, Maenosono discloses the first nanoparticles have a diameter to reflect the color red and the second nanoparticles have a diameter to reflect the color green (*col. 14, lines 4-30*) and from figure 4c it is apparent that the particles are spherical, which reads on Applicant's limitation wherein the first colloidal particles are spherical colloidal particles having a first diameter and the second colloidal particles are spherical colloidal particles having a second diameter different from the first diameter, and wherein the device is characterized by a reflectance bandwidth determined by the diameter of the first spherical particles and a second reflectance peak having a wavelength position and bandwidth determined by the diameter of the second spherical particles.

Potentially Allowable Subject Matter

11. Claims 95 and 98 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

They are potentially allowable because their features are not taught or suggested in the prior art.

Art Unit: 1772

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia Chevalier whose telephone number is (703) 305-1139.

The Examiner can normally be reached on Monday through Thursday from 8:00 a.m. to 5:00 p.m. The Examiner can also be reached on alternate Fridays


If attempts to reach the Examiner are unsuccessful, the Examiner's supervisor, Harold Pyon can be reached by dialing (703) 308-4251. The fax phone number for the organization official non-final papers is (703) 872-9306. The fax number for after final papers is (703) 872-9311.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose phone number is (703) 308-0661.

ac

11/28/03

A handwritten signature, possibly reading 'AC', is written in black ink.


SANDRA M. NOLAN
PRIMARY EXAMINER